



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,229	12/22/2000	Maged E. Beshai	11958ROUS01U	7187

7590 04/28/2004

Allan P. Millard  
c/o Nortel Networks Limited  
Intellectual Property Law Group  
P.O. Box 3511, Station C  
Ottawa, ON K1Y 4H7  
CANADA

EXAMINER
----------

DENNISON, JERRY B

ART UNIT	PAPER NUMBER
----------	--------------

2143

DATE MAILED: 04/28/2004

2

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/742,229

Applicant(s)

BESHAI ET AL.

Examiner

J. Bret Dennison

Art Unit

2143

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This Action is in response to Application Number 09/742229 received on 22 December 2000.
2. Claims 1-35 are presented for examination.

#### ***Specification***

3. The disclosure is objected to because of the following informalities:

The Summary on page 5 contains the sentence "The method comprises steps of (to be added)" on lines 19 and 26. These sentences should either be removed or the method should be explained. Appropriate correction is required.

#### ***Claim Objections***

Claims 1, 10, 20, 26, 27, 28, 34, and 35 are objected to because of the following informalities:

4. Line 6 of claim 1 contains the following: "from a source node to a sink nodes." Appropriate correction is required.

5. The limitations of claims 1, 10, 20, 26, 27, 28, 34, and 35 are in outline format. Claims must appear in sentence form. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2143

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5, 7-14, 16-18, and 20-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Seidel (U.S. Patent Number 4,383,316) hereinafter referred to by Seidel.

Regarding claims 1, 10, 20, and 28, Seidel discloses in a network comprising a plurality of source nodes and a plurality of sink nodes, said source nodes connecting to said sink nodes by a plurality of core nodes, each of said source nodes having a multiplicity of multi-channel links to said plurality of core nodes, each of said core nodes having a multiplicity of multi-channel links to said sink nodes, a first-order smearing method for transferring data segments of a data stream from a source node to a sink nodes, each segment having a header identifying a data stream, said method applied at each source node and comprises steps of:

logical sorting of data segments according to data stream identifiers (Seidel, col. 1, lines 54-60);

selecting a two-link path from said source node to said sink node for each data stream (Seidel, col. 1, lines 49-52, col. 3, lines 22-23 and col. 4, lines 6-15, Seidel teaches the number of paths depend on the number of telephone numbers to be used, therefore the user may select a two-link path);

identifying channels of a first virtual link in said two-link path (col. 3, lines 18-25, col. 3, lines 30-33);

updating a virtual-link-specific cyclic pointer to said channels of said first virtual link (Seidel, col. 3, lines 18-25); and

assigning a data segment of said data stream to a channel indicated by said virtual-link-specific cyclic pointer (Seidel, col. 3, lines 8-15).

7. Regarding claims 2, 3, 11, and 12, Seidel teaches the features of the invention, substantially as claimed, as described in claims 1 and 10, including wherein data received at a source node is sorted into a multiplicity of data streams defined according to a data sink (col. 3, lines 5-15, Seidel teaches the data being sorted into a multiplicity of streams defined according to its destination).

8. Regarding claims 4 and 13, Seidel teaches the features of the invention, substantially as claimed, as described in claims 1 and 10, including wherein the data is segmented into equal-size segments (Seidel, col. 3, lines 5-7, Seidel teaches the data segmented either bit-by-bit or sample-by-sample, which is of equal size).

9. Regarding claims 5 and 14, Seidel teaches the features of the invention, substantially as claimed, as described in claims 4 and 12 including wherein each of said equal-size segments includes a routing header (Seidel, col. 3, lines 9-10).

10. Regarding claims 7 and 16, Seidel teaches the features of the invention, substantially as claimed, as described in claims 2 and 11, including wherein the transfer of each of said data streams is rate regulated (col. 2, lines 50-65).

11. Regarding claims 8 and 18, Seidel teaches the features of the invention, substantially as claimed, as described in claims 1 and 10, including wherein the core node comprises a single-plane switching fabric having a sufficient number of input ports to support all incoming multi-channel links and a sufficient number of output ports to support all outgoing multi-channel links (Seidel, col. 3, lines 27-30 and Figure 3, Seidel teaches the use of a plurality of switches at the last central office.

12. Regarding claim 17, Seidel teaches the features of the invention, substantially as claimed, as described in claim 10, including wherein said second-order smearing method is implemented by said source nodes (Seidel, col. 3, lines 5-15, Seidel teaches that at the data at the originating terminal is distributed to a predetermined plurality of channels).

13. Regarding claims 21 and 29, Seidel teaches the features of the invention, substantially as claimed, as described in claims 20 and 28, including wherein the source/sink nodes are geographically dispersed (Seidel, col. 2, lines 45-50, col. 3, lines 20-25).

14. Regarding claims 22 and 30, Seidel teaches the features of the invention, substantially as claimed, as described in claim 20, including wherein the core nodes are geographically dispersed (Seidel, col. 3, lines 20-25, Figure 3, Seidel teaches an

originating terminal, a central office, and a terminating terminal, each geographically dispersed).

15. Regarding claims 23, Seidel teaches the features of the invention, substantially as claimed, as described in claim 20, including wherein the connection between the originating terminal and central office is an optical fiber that supports multiplexed signals (Seidel, col. 1, lines 45-47, col. 4, lines 45-50).

16. Regarding claim 24, Seidel teaches the features of the invention, substantially as claimed, as described in claim 20, including wherein each of said source nodes is paired with a selected one of said sink nodes and each paired source-node sink-node share a common switching fabric (Seidel, Fig. 3, Seidel teaches sharing the central office switching fabric).

17. Regarding claim 25, Seidel teaches the features of the invention, substantially as claimed, as described in claim 20, including wherein each core node comprises a plurality of parallel input-buffered space switches (Seidel, col. 3, lines 45-67).

18. Regarding claims 26 and 34, Seidel teaches the features of the invention, substantially as claimed, as described in claim 20 and 28, including wherein said load-balancing apparatus includes:

means for data sorting according to data stream identification (Seidel, col. 3, lines 7-9);

means for allocating each stream to a multi-channel link leading to a core node (Seidel, col. 3, lines 8-9);

means for selecting a channel in said selected multi-channel link (Seidel, col. 3, lines 8-9); and

means for assigning said each packet to said selected multi-channel link (Seidel, col. 3, lines 5-9).

19. Regarding claims 27 and 35, Seidel teaches the features of the invention, substantially as claimed, as described in claim 26 and 34, including wherein the load-balancing apparatus further includes:

wherein data segments sorted according to data stream identifier are placed in said memory; and

wherein said smearing controller selects a selected channel in a multi-channel virtual link for a selected one of said data segments and places said selected one of said data segments in a queue in segment memory, said queue corresponding to said selected channel.

Seidel teaches that a data stream is distributed in equal sized data segments to a predetermined plurality of channels (Seidel, col. 3, lines 5-10). It is inherent that the original data is broken up into data segments stored in memory and then transferred to a buffer for transmission through the channel.



20. Regarding claim 31, Seidel teaches the features of the invention, substantially as claimed, as described in claim 28, including wherein the cross connectors are geographically dispersed (Seidel, col. 3, lines 20-25).

21. Regarding claim 32, Seidel teaches the features of the invention, substantially as claimed, as described in claim 28, including wherein each cross connector includes parallel planes of optical space switches, the number of planes being at least equal to the highest number of channels in a connecting link (Seidel, col. 3, lines 45-60, Figure 3).

22. Regarding claim 33, Seidel teaches the features of the invention, substantially as claimed, as described in claim 28, including wherein the connectivity of any of the cross connector is adapted to follow projected spatial traffic-intensity distributions (Seidel, col. 3, lines 5-10, Seidel teaches that the data is distributed in equal-sized data segments over a predetermined plurality of channels, which follows spatial traffic intensity distributions).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 15, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seidel in view of what is obvious in the art.

23. Regarding claims 6 and 15, Seidel teaches the features of the invention, substantially as claimed, as described in claims 5 and 14, including a header block of each data segment, including information necessary to set up the required number of connections at the terminating end (Seidel, col. 2, lines 20-25). However, Seidel does not explicitly state that each routing header includes a sink identifier. It would have been obvious to one in the ordinary skill in the art at the time of the invention to include a sink identifier into the header of each data segment because each data segment must have destination information to be routed to the correct location.

24. Regarding claim 19, Seidel teaches the features of the invention, substantially as claimed, as described in claim 18 including using a plurality of switches (Seidel, col. 3, lines 45-50). Seidel does not explicitly state wherein each of said single-plane switching fabrics has an internal expansion. However it would have been obvious to one in the ordinary skill in the art to integrate an internal expansion into the switching fabrics of Seidel in order to support more channels, for the benefit of increasing the amount of data segments being transferred.

### ***Examiner Remarks***

25. It is the Examiner's position that the claimed invention does not distinguish over the prior art used in the above rejection. The independent claims 1 and 10 include a source node streaming data through multiple channels in a two-link path, which is well known in the art. Independent claims 20 and 28 include a plurality of source nodes with the same functionality. Seidel discloses a method and apparatus for transmitting a data signal by streaming data segments across a multiplicity of channels, the channels across different paths, in order to produce a high-speed data signal over a network. Therefore, Seidel teaches the functionality of the claimed invention and the Applicant should submit amendments to the claims in order to distinguish over the prior art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Bret Dennison whose telephone number is (703)305-8756. The examiner can normally be reached on M-F 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A Wiley can be reached on (703)308-5221. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 2143

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J. Bret Dennison  
Patent Examiner  
Art Unit 2143



DAVID WILEY  
SUPERVISORY PATENT EXAMINER  
BIOLOGY CENTER 2100